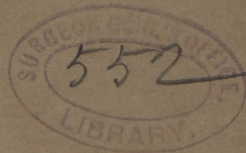


MARCH (A.)

ENCYSTED OSSEOUS TUMORS;  
OR  
A THIN SECRETING MEMBRANOUS CYST,  
DEVELOPED IN  
CANCELOUS STRUCTURE OF BONE,  
AND  
SURROUNDED BY A THIN BONY WALL.

By ALDEN MARCH, M. D., of Albany.



ALBANY:  
VAN BENTHUYSEN, PRINTER, 407 BROADWAY.  
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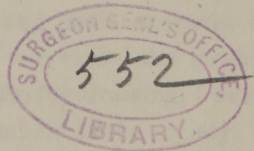
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Encysted Osseous Tumors; or a thin secreting membranous cyst, developed in cancellous structure of bone, and surrounded by a thin bony wall. By  
ALDEN MARCH, M. D., of Albany.

Whenever morbid action results in a peculiar form of growth, and occurs so seldom as rarely to fall under the observation of but few old and experienced surgeons, its interest becomes enhanced in proportion to the rarity of its occurrence.

That which is common and familiar to all, need not be made more conspicuous, by ocular demonstration. The light of science, and the common observation of the profession, render diagnosis in such cases comparatively easy; and an extensive experience has greatly contributed to a safe and judicious mode of treatment.

All knowledge, whether professional or otherwise, is acquired by observation, and by reading the records of the experience of those who have gone before us, and have garnered up, and deposited in the storehouse of useful observation, lessons of wisdom and of instruction.

With the sincere desire to make myself useful to this society at least, and to add my mite to the general stock of professional knowledge, I shall venture to offer my views and experience as regards the character and treatment of a disease indicated by the title with which I have designated it, and shall endeavor to illustrate the subject by the relation of two cases, the morbid specimen of one of which, and an accompanying drawing, I herewith present for the inspection of the members of the society.

The chief sources from which are derived the knowledge of the peculiar and rather rare form of disease which is to be the subject of this paper, are from personal observation, and from the writings of Baron Dupuytren.

It is inferred that the disease is of rare occurrence, since the venerable and widely and justly celebrated New-England surgeon, Dr. John C. Warren, does not allude to such a form of disease, or tumor of the bones, even in his voluminous work on "Tumors;" and also from the fact that most other modern authors, with the exception of Dupuytren, have passed the subject by with but little more than a casual remark, if noticed at all, as will be observed from the quotations that will follow.

It is said that "names are arbitrary," and therefore anyone has a right to appropriate to himself, or to any object around him, such a name as he may think proper. And yet in science a name should convey to the mind some definite idea of the thing or object itself. A name, then, ought not to be regarded as an unmeaning thing. The multiplicity of names and synonyms in our profession are apt to embarrass and lead to mistaken notions of the real thing or disease which it is intended to designate. Sir Astley Cooper illustrates the folly and absurdity of multiplying names to express the same structure by the following remarks and anecdote. In giving some of the synonyms of malignant disease of the testis, he remarks, "A multiplicity of names to distinguish the same thing is always a disadvantage, nor can I better point out the folly of such a nomenclature than by quoting the expression of a learned judge, who in trying a medical case, heard one evidence (witness) speak of cellular membrane; a second, cellular tissue; and a third, of reticular membrane; 'What!' said his lordship, 'three names for the same structure! how absurd—how confusing!'"

In the judgment of the writer, the true policy in the selection and use of a name should be to employ that which conveys the best idea of the appearances and nature of the disease or tumor under examination.

It is to be presumed that shades of difference, in the physical and organic character of tumors, have given rise to different names for essentially the same tumor or disease, with which our standard works on surgery abound.



With a view to show that the disease we are now considering occupied but a small share of the attention of surgical writers; and to show that nearly the same thing is intended to be represented by different appellations, I shall quote from several surgical works, or indeed, from about all to which I can conveniently have access.

Liston, in his work on practical surgery, at page 216, says: "Cysts containing serous or glairy fluid, are often met with in these masses." Meaning a kind of fungus mass developed in the spongy texture of the lower jaw; and by its growth and accumulation, the walls or plates of the bones, are expanded, thinned, and are soon involved in the morbid structure. Although the author does not designate this disease by any specific name, except as under the head of "bony tumors of the lower jaw," yet it is thought quite evident that he intends to allude to the disease under consideration. Again he remarks in his Elements of surgery: "Spina ventosa of the jaw often originates, as before mentioned, in a small cyst, at the root of a decayed or dead tooth. The disease is usually situated on one side of the lower jaw, but sometimes occurs in the upper." Hereafter we propose to show, that what was formerly called spina ventosa, may have been encysted osseous humors.

In Fergusson's Practical Surgery, under the head of "Operations on the jaws," we find the following remarks and allusions, as it is believed, to encysted osseous tumors, viz: "The hard parts of the jaws are in some instances primarily affected; here the swelling may consist of solid bone—a kind of exostosis, or, it may be an osseous cyst, containing a glairy, or a serous fluid." The term "osseous cyst," is farther employed by the same author in speaking of the means of diagnosis, and the proper mode of management, to which I shall again refer under the head of "treatment."

We find in "Druitt's Modern Surgery," at page 226, the following: "Hydatids, or thin cysts, containing a clear water, are occasionally developed in the substance of bone, causing it to expand and form a tumor, the diagnosis of which must be

exceedingly difficult until the part has been laid open by operation."

In the American edition of "The Principles of Surgery," by James Miller, page 408, we find a brief though excellent description of what I have called encysted osseous tumors, designated by the term "Osteo cystoma." The author says, "there is an affection termed Osteo cystoma, in some respects resembling chronic internal abscess; by the ancients supposed to be of a windy character, and hence, improperly called "Spina ventosa." Usually it is classified with tumors of bone; and may be considered analogous to the encysted tumors of soft parts.

A membranous cyst forms in the interior of a bone, causing equable pressure of the laminae, and forming a cavity occupied by fluid, sometimes puriform, sometimes clear and glairy. The parietes, as the cavity slowly enlarges, are more and more attenuated; at some points they become membranous, and ultimately the membrane too may give way. No osseous deposit accompanies the dilation, as in chronic abscess; for the morbid process is from the first, little, if at all connected with inflammatory action. The cavity is lined by a membrane more of a serous than of a pyogenic character, and sometimes membranous septa subdivide the space as in multilocular serous cysts.

The distinctive characters of the swelling thus are, "the contents not always or even often purulent; the parietes simply expanded and consequently alternated; the formation neither preceded nor accompanied by inflammatory action; commencing in the cancellated interior by non-inflammatory formation of a cyst, which partakes largely of the serous character."

When we come to compare this description of osteo cystoma of modern times, or spina ventosa of the ancients with the description of the cases of encysted osseous tumors, to which allusion has been made and a description of which I shall presently give, we shall find, I apprehend, almost a perfect identity. In Braithwait's Retrospect of Practical Medicine and Surgery, part 31st, 1855, and at page 140, under the head of "Tumors of the Jaws," will be found an abstract of a paper by Professor James Syme,



of great interest and altogether of a practical character, in relation to the particular form of the disease under consideration. After noticing the anatomical difference between the upper and lower jaw and the difference in their pathology, the former being mostly in the one having a large cavity lined with a mucous membrane, and covered on the outside with a much thinner periosteal membrane, while the lower jaw is more dense, compact, and its periosteum is quite capable, when the old bone has been removed by death and exfoliation, of reproducing a new bone; he says, "I have repeatedly seen almost the whole lower jaw, including the condyles, thrown off as an exfoliation, yet complete reproduction has taken place." "On the contrary," he says, "no reproduction of bone takes place in the upper jaw after removal of the exfoliation." In necrosis of the compact or solid bones, we should naturally infer from these remarks, that Professor Syme attributes the chief agency in the formation of new bone to the periosteum; a conclusion at which I had arrived many years since. He farther says, "there has been a notion prevalent, that tumors of the upper jaw originate in the antrum. This is erroneous, their origin is in all cases similar to tumors of the lower jaw." This point, so far as the osseous cyst of the jaws is concerned, is fully sustained by the numerous cases recorded by Dupuytren, and also, so far as my limited experience goes, in observing the same disease in both jaws.

Prof. Syme next classifies the tumors of the jaws. He enumerates five different kinds, three solid and two fluid. But as we are not to consider the solid tumors, except hereafter in contrasting them with the encysted osseous tumors to aid in diagnosis, we shall proceed to notice his two varieties of fluid tumors. He says, "the fluid tumors of the jaws are of two sorts, being collections either of serous or purulent fluid." It would hardly be pertinent at this time and on this occasion, to step aside to criticise what Mr. Syme calls tumors of the jaws "being collections of purulent fluid." He says tumors depending on purulent collection, are not at all uncommon. They are almost invariably in connection with the stump of a tooth. But we cannot refrain from remarking, that we do not

see the propriety of calling an abscess in the jaw a tumor, any more than we should a collection of purulent fluid in the soft parts, in the large joints, or in any other portion of the osseous system.

An abscess, it is true, is an enlargement of the part in which it is situated. So is a cystic tumor. But they are not at all alike in their characteristic action and development. The one is preceded by all the characteristic symptoms of inflammation. In the one, there is a pyogenic or pus-secreting membrane; in the other, the lining membrane of the bony shell is of a serous character; and the contents of the cysts differ as widely as do their pathology. Prof. Syme does not dwell on the pathology of cystic tumors of the jaw. His method of diagnosing the disease and mode of treatment, will be referred to in the proper place.

Even Baron Dupuytren, who devotes some fourteen or fifteen pages to the consideration of "osseous cysts in bone," and illustrates their general character and treatment by the presentation of quite a number of cases, allots but little space to their pathology. Elaborate and accurate, as we have every reason to believe, are the labors and researches of Paget, as recently presented to us in his system of "Surgical Pathology," we find no description of the osseous cysts or encysted osseous tumors in the jaw, nor even allusion to such a form of disease or tumor. It is not to be found under the head of "osseous," nor that of "cystic tumors." He gives us his views, however, of the formation and pathology of cystic tumors, met with in a variety of other textures beside the bones. He says "cystic tumors form a very numerous group, and have only or barely these characters in common, namely, that each of them is essentially a cyst, sac or bag, filled with some substance which may be regarded as entirely, or for the most part, its product, whether as a secretion or as an endogenous growth. Our author divides 'cystic tumors' into, first, simple or barren; and, second, compound or proliferous; the former containing fluid or unorganised matter—the latter containing variously organised bodies." Next we have his views of the modes of origin of cysts. He says, some are formed by the enlargement and fusion of the spaces or areolæ, in fibro-cellular, areolar, or other tissues. In these spaces, fluids collect and ac-



cumulate; the tissue becomes rarefied, and gradually the boundaries of the spaces, are levelled down and walled in, till a perfect sac or cyst is formed, the walls of which continue to secrete. By way of illustration he adds: "Thus are produced the bursæ over the patella and others." Inasmuch as his second and third mode of the formation of cysts, cannot apply to development of cysts in bone, we shall not be detained by their consideration; preferring to apply the theory of our author of the formation of cysts, as they are met with in fibro-cellular or areolar tissues. If cysts are formed by the "enlargement and fusion of the spaces or areolæ" of the softer tissues, we can conceive of no good reason why they may not be developed in the reticulated or cancellous structure of bones, by a similar mode. We suppose that a single cell, in the spongy texture of bone, may be the seat of morbid action—that the minute vessels of that solitary cell, may secrete a serous or sero-albuminous fluid, as in examples of cystic tumors of the jaw, and that by the increase of the fluid secretion, aggression and consolidation is made upon the surrounding reticulated or cancellous tissue; encroaching more and more, till the spongy texture of the bone disappears, and its walls become, ultimately, exceedingly attenuated, and at some points altogether absorbed by continuous pressure from within, by that kind of absorption called "progressive absorption."

Whenever we meet with several cells, more or less enlarged in the same bone, as in our specimen of the lower jaw, their origin and development are in as many different nuclei or points as there are cysts. Thus the general cavity or space is subdivided by membranous partitions, as in multilocular serous ovarian cysts.

Having presented all the pathology of encysted osseous tumors, of which we are able to avail ourselves, with our present knowledge of the disease, we shall now briefly consider, first, their cause; second, their diagnostic symptoms; third, their treatment, and lastly, illustrate the subject with the history of two cases.

*Cause.*—In this, as well as in many other diseases, it is exceedingly difficult to assign a satisfactory cause. Dupuytren

says: "The causes which favor the development of osseous cysts are generally very obscure. Not unfrequently the origin of these affections is an entire mystery." And yet occasionally their development may be referred to external violence—to morbid changes at the roots of the teeth, or in the cancelli of the jaw itself. Fortunately, in this affection, the failure to discover the cause does not essentially modify the plan of treatment; nor does the discovery throw any light on the means of diagnosis.

*Diagnosis.*—With a moderate amount of experience and tact in the examination of a tumor connected with the lower jaw, it will be easy to distinguish between one situated in, or connected with the jaw, from one originating in the soft parts under or around the jaw. The tumors most likely to be confounded with, or mistaken for, encysted osseous tumors, are Osteoma or Exostosis, Osteo sarcoma, or fibro cartilaginous and Osteo-cephaloma.

Osteoma or exostosis originates either from the periosteum, or from the surface of the bone—is an out growth, more or less circumscribed—hard and unyielding.

Osteo sarcoma or fibro cartilaginous tumors, originate in the cancellated texture of the bone, the interior of which seems to be converted into a kind of fibro-osseous mass, or fleshy and bony material, as its name would suggest.

Osteo cephaloma is of a character somewhat similar to the last mentioned. Like it, it originates in the cancellated structure of the jaw; like it, increases and attenuates its walls, and is equally malignant. In its physical texture it differs in being much softer, and more brain like, as the name would indicate.

We think, therefore, that there can be no very great danger of confounding a cystic tumor of the jaw with Osteoma, or a solid exostosis, situated on the surface of the bone. But to distinguish it from the last two forms of disease, there would appear to be much more difficulty.



Dupuytren says: "To form a correct diagnosis of osseous cysts, requires much practice and experience."

Prof. Syme says, cystic tumors of the jaw, grow in the substance of the bone, and are generally, at some parts of their extent, as hard and unyielding as bone, so that if the examination be limited to those parts, the tumor will be supposed to be solid.

I apprehend that the solidity and unyielding character, will be much more perceptible at a pretty early period of its growth, long before the compact walls become attenuated and reduced to a mere shell, by progressive absorption. We are told that distinguished surgeons have commenced an operation for the removal of what had been regarded a solid or osteoid tumor, when the knife happening to penetrate that portion of its outer wall, already reduced almost to a membrane, a copious flow of serous fluid revealed the nature of the swelling.

This mistake may be avoided by making pressure with the fingers on all parts of the tumor; and if it is cystic, and in an advanced stage, we shall be pretty sure to detect its yielding and crackling character. Dupuytren says, "Pressure with the finger on the thin shell of bone, will cause it to yield like a piece of very dry parchment, or a sheet of crumpled paper; this species of crepitation is a pathognomonic sign of great importance." But he further says, "Should any doubt exist as to the real nature of the disease, the additional evidence obtained by puncturing with an exploring needle, is sufficient to set the matter at rest." In the use of the grooved exploring needle, if the contents of the cyst be serum, or thin, and of a fluid character, it will be made manifest by the escape of a drop or two, either on the instrument, or at the seat of the puncture, on its removal."

Should the contents of the cyst be a soft solid, or encephaloid, the extremity of the needle penetrating the cavity of the cyst, may be made to oscillate or vibrate, something like the pendulum of a clock, by moving the portion of the instrument held with the fingers back and forth, or from side to side. On the other hand, if the interior of the tumor should be solid, and more or less firm, like a fibrous osteoid, or osteo-sarcomatous tumor,

although the instrument may be made to penetrate it, no such motion of the penetrating part can be produced. This test will apply equally well in the exploration of uterine and ovarian tumors. The history of the case, and the condition of the patient, will throw additional light on the diagnosis. In all cases of pure and uncomplicated encysted osseous tumors, I believe no malignant action prevails, and that therefore they are amenable to the art of surgery.

With a view to make the diagnostic symptoms of the disease still more distinct, even though we shall in some measure anticipate the treatment, or at least one mode of treatment, we shall select a case from the writings of Dupuytren, on the diseases and injuries of bones, published by the "Sydenham Society of London," in the year 1847. It is case eighth, denominated "Cyst with osseous parietes in the lower jaw, cured by incision."

A young man came, in 1828, to the Hotel Dieu to be treated for a tumor of the lower jaw; it was ovoid in form, and had attained the size of a pullet's egg. Its growth had been slow, unattended by lancinating pain, and without change of color in the skin, or other symptom of fungus disease. Its greatest prominence was externally, and its position called for a variation in the mode of operating. Crepitation was at first distinct, but was afterwards for a time imperceptible, owing probably to the frequent manipulation of the tumor by those who examined it. Shortly after the patient's admission into the hospital the following operation was performed: an incision was carried along the posterior border of the masseter muscle, commencing a little below its centre, so as to avoid injuring the vessels and facial nerve, and extending to the angle of the jaw. On separating the edges of the wound, the character of the cyst became more apparent. It was enveloped by a delicate membrane, apparently serous, and was smooth and without inequality or projection at any part. The anterior wall of the cyst was then laid open with a bistoury, and gave exit to a copious flow of bloody serum, but there was no appearance of any solid matter within. A pledget of lint was introduced between the edges of the incision to prevent reunion, and some emollient injections were administered,



and a poultice was applied. In the course of a short time a free suppurative action was established in the interior of the cyst, which was frequently washed out with a syringe. A slight but unimportant blush of inflammation and swelling appeared on the cheek, in the neighborhood of the opening, and the pain which was at first experienced gradually subsided. The calibre of the sac also palpably diminished. So satisfactory was this progress that I did not attempt the employment of artificial pressure, being satisfied that the compression exercised by the masseter on one side and the pterygoids on the other would suffice to accomplish the obliteration of the cyst. I had the satisfaction ultimately of witnessing this result, and the patient left the hospital quite cured, a small cicatrix alone marking the site of the incision.

*Treatment.*—The rule of practice in the treatment of ordinary encysted tumors has long been established; it is founded on true pathological principles, that of either changing the action of the secreting cyst, or of destroying it at once. In the serous cyst of hydrocele, if a radical cure is attempted, the perverted action of the cyst is arrested by restoring the loss of balance of power between secernents and absorbents, or by obliterating the cavity through the agency of inflammatory action and adhesion. In an atheromatous, as well in a melicerous tumor, a radical cure may be effected by removal of the secreting cyst, or by converting it into a pus-secreting membrane by which the cavity may be obliterated by the process of granulation and cicatrization. Upon such principles we base the treatment of “encysted osseous tumors.”

Dupuytren and others have tried, First, puncture and injection of various irritating agents. Second, seton. Third, incision, and stuffing the cyst with lint. Fourth, incision, and removal of the membranous sac; and, Fifth, amputation of the diseased portion of the jaw.

*First.* The thinnest part of the bony or fibrous wall should be selected for puncturing, and the opening should be made on the inside of the mouth, and sufficiently large to permit the injected

fluid readily to escape, and to remain open till its walls become contracted, and the cavity obliterated. Injection of tincture of iodine, of creosote, of corrosive sublimate, of sulphate of copper, and of nitrate of silver, may be tried in such strength as will be most likely to bring on suppurative action in the membranous cyst, and repeated more or less often, according to effects.

*Second.* I am inclined to believe that the plan of using a seton is not the most easy for the surgeon, or pleasant to the patient. The osseous wall must be either absorbed or broken down by violence, before the seton can be inserted. In the case related by Dupuytren the osseous paries was perforated on the inside of the mouth first; next a counter opening was made below and externally, through which the seton was passed. If a cure can be brought about without wounding the external soft parts, all the better; if not, let it be done in a way that shall leave the least possible scar.

*Third.* A considerable portion of the bony wall of one of these cysts may be readily removed with a delicate and sharp gouge, by placing it upon the tumor on the inside of the mouth, and, with the palm of the hand, give it a sudden and sharp rap. When the cavity is once penetrated, the opening may be readily enlarged, either by the same instrument, by bone nippers, or by common dressing forceps. After the fluid has escaped, the cavity should be filled with dry lint, and suffered to remain till it becomes loosened by suppurative action. And as the walls of the cyst contract, and as the cavity diminishes, less and less lint should be inserted.

*Fourth.* The bony wall of the cyst may be removed as already described, and its lining membrane scraped out, by suitable dental instruments. If the cyst should be single and accessible, I believe it can be entirely removed, and thereby a radical cure effected. In cases where either or all the above means have been employed; and although for a time a cure has thought to have been accomplished, and yet has been followed with a relapse, or redevelopment of the same form of disease, near its original location, it is to be presumed that a new cell or cyst has been



gradually enlarging; as in the case of Prof. Syme, and in one of my own, which will more fully illustrate this point.

*Fifth.* The last resort is to amputate the diseased portion of jaw. It will be found in the work from which I have already had occasion to make an extract, that Prof. Syme gives us the following case. He says: "It is also possible that the cysts may be complex and so extensive as to require removal. A patient left the hospital only a few weeks since, who applied to me five years ago, on account of a large cystic tumor of the lower jaw, which I opened, and gave exit to a large quantity of albuminous fluid, and stuffed the cavity with lint. The swelling afterwards contracted to a considerable extent, but never entirely disappeared, and she returned two years later with the tumor as large as it was when I first saw her, and affecting the jaw more extensively. I again opened and stuffed it, and the tumor again contracted to a certain extent. It, however, again increased, and I repeated the process for the third time, but with the same result, the patient returning last autumn with the tumor, larger than ever, and extending now from the symphysis to the coronoid process. I removed half of the jaw by disarticulation; and on examination we found that the cyst, instead of being simple was complex, consisting of four chief cavities, the walls of which were studded with smaller cysts of various sizes. It was clear that in this case nothing short of excision of the portion of the bone affected could have produced a cure."

*Case 1.* Mr. S. S——, of Schenectady, N. Y., aged thirty, a portrait painter by profession, and of a bilious temperament, was the subject of an encysted osseous tumor in the upper jaw. Dr. Van Ingen, a well educated and very intelligent physician of the place, was first called on for professional advice and assistance; and, by the careful manner in which he investigated the case, he was enabled to come to the conclusion, without the use of the exploring needle, that the tumor was apparently osseous; and yet, so thin was the anterior wall, covered by the upper lip, that a yielding, if not a peculiar crackling sensation, was communicated to the fingers, on making alternately light and heavy pressure upon it.

*March 7th, 1845.*—I was called to see the patient, and to operate for the removal of the disease, if it should be thought expedient. At this time, I learned that it was first noticed about three years before, and that it seemed to have originated from the socket of a decayed tooth, or from the cancellous structure of the anterior wall of the antrum—being developed towards or into the antrum, as well as externally, to such an extent as to produce strongly marked deformity in the features. In the centre of what we had called a bony tumor, we found a cavity capable of containing four or five drachms, and lined with a thin membrane, from which a greenish yellow, or whey colored fluid, was secreted. Among my notes of surgical cases taken at the time of the operation, I find it named “*spina ventosa*,” and described as follows, viz: “The operation consisted in dividing the soft parts of the face and mouth from the malar bone in the direction of the zygomatic muscle into the mouth near the angle. The flaps were dissected off from the tumor, and the anterior bony wall was cut through with a small gouge. Next the lining membrane of the cavity was removed; and on carrying the examination still farther, at the upper part, and under the orbitary plate, a thin, bony wall, or thin shell of bone, was formed, to separate the cavity first exposed from the antrum. This shell of bone was carefully scaled or chipped off with the gouge, and all parts removed which appeared in the least degree diseased. The cavity was filled with lint, and the wound in the face and lip was secured with five or six interrupted sutures. The cure was rapid and complete; and the patient remains free from any return of the disease up to this date, and with so little of a scar as scarcely to be noticeable.

*Case 2.* Mrs. E. A., now aged 27, of West Farnham, Canada East, when about fourteen years of age, in January, 1843, took a heavy cold, which resulted in a swollen face and ulceration of the root of a dead tooth on the left side of the under jaw, near the middle of the base. Not long after the diseased tooth was extracted, which was soon followed by the formation of a small tumor of the size of a split pea when first observed, and in the situation occupied by the dead tooth. The tumor continued to



THIS CUT IS DESIGNED TO REPRESENT THE MORBID SPECIMEN  
REMOVED FROM THE UNDER JAW OF MRS. A., AS DESCRIBED  
IN THE REPORT OF THE ANNEXED CASE :



*A* Lining and secreting membrane of cell.

*B* Condylod, or articulating process.

*CCC* Separate cells.





increase, without pain or impairment of health, until August 27, 1845, when it had attained to nearly the size of a small hen's egg, at which time she submitted to my first operation for its removal. At that period she was sixteen years of age, and presented all the appearances of a vigorous, healthy, rosy-cheeked and fully developed female of riper years.

Before commencing the operation for the removal of the diseased portion of the jaw, I must confess I regarded it as another specimen of osteo sarcoma or fibro-osseous tumor, of a solid character—a form of disease of the lower jaw of which I had become somewhat familiar in the course of my practice, having previously operated in some four or five cases by excision. I think my diagnosis would have been different, had I taken the precaution to have examined the tumor in the manner already pointed out, by manipulation and by exploration in a thorough manner.

The mode I have usually adopted for the removal of a portion of the lower jaw, occupied by osteo sarcoma or osteo cephaloma, has been : First, to extract a tooth a little beyond each extremity of the disease; Second, to make a semilunar incision on the base of the jaw, commencing with one of its horns at a point opposite and below the socket from which one of the teeth had been removed, and by carrying it downwards under the base of the jaw and terminating it at the socket from which the other tooth was extracted; Third, I next raise the semilunar flap by detaching it more or less from the outer face of the jaw, and by thrusting a sharp pointed knife or bistoury through the mucous membrane at each extremity of the wound into the mouth; and Fourth, I then proceed to remove a transverse section of the jaw, with a short metacarpal saw, as recommended by Dr. Warren, or with the chain saw.

In the case I am now describing, in the act of detaching the soft parts from the bone, the outer wall of the tumor or cyst was perforated, and from which escaped about half an ounce of yellowish serum or fluid. I soon discovered that the thin bony shell was lined with a delicate secreting serous membrane, which

I endeavored to remove. After cutting away a considerable portion of the outer wall, the semilunar flap was brought into proper apposition and secured by two or three sutures, and to the cavity in the jaw was applied, from time to time, tincture of iodine and sulphate of copper, lint, &c. Cicatrization appeared complete in the course of five or six weeks, when the young lady returned to Canada in the enjoyment of perfect health.

For nearly five years there was no appearance of a redevelopment of the disease. During that period the patient had been married, and had given birth to a perfect and healthy child.

In the fall of 1849, a swelling was observed to occupy the angle and upright portion of the jaw. I think it was in December, 1849, or in January, 1850, that I was consulted by letter in relation to the safety and propriety of again removing the tumour, in her delicate condition at that time, that of being four months advanced in pregnancy. Having advised an operation, she again visited our city and placed herself under my care, in February, 1850. At this time I had the counsel and advice of my colleagues, Drs. Armsby and Hun. We had no difficulty in diagnosing the true nature of the disease. My former experience in the same patient, together with the crackling or yielding sensation communicated to the fingers when pressure was made upon the tumour; and by exploration made with a grooved needle, indicated with the utmost certainty its true character. The swelling seemed to occupy all of the angle and ramus up to the point where it terminates in the condyle and coronoid process; and, therefore, was so covered up by the parotid gland and its duct, the facial branches of the portiodura and the branches of the carotid artery, that it would appear to be very difficult to remove the entire diseased structure, without wounding some of these important parts.

The chief question for consideration was, whether the jaw should be sawed through the healthy part of its base, and the diseased portion removed at the articulation, or that something of the same kind of an operation as before employed should again be attempted. In consideration of the peculiar situation



of the patient, and of the formidable character of the first proposition, the latter was adopted on the 17th of February, 1850.

The incision was commenced a little in front of the angle over the base of the jaw, and carried in a curvilinear direction over the angle, and upwards to about opposite the extreme point of the lobe of the ear, taking care to stop short of dividing any important branches of the facial nerve, and the duct of the parotid gland. The semilunar flap was next raised; the osseous wall was cut away, when an ounce or more of sero-albuminous fluid escaped. By the aid of curved dental instruments, the secreting membrane, to a considerable extent, was removed. The extent and dimensions of the cavity were sufficient to receive nearly the whole length of the forefinger. This large cavity was filled with lint, and the skin brought into its proper place and secured by sutures and adhesive plaster. In a week or ten days a healthy suppurative action was fully established in the cavity. The subsequent treatment consisted in applying to the cavity of the bony cyst, tincture of iodine, strong solution of nitrate of silver and creosote through the opening on the inside of the mouth, by the aid of a camel's hair pencil. In six weeks the cavity was so much diminished, either by the contraction of its walls, or by the granulating and cicatrizing process, and the cure was so nearly completed, that the patient was again permitted to return home in good health, when in due time she gave birth to another perfect and healthy child. From this time the patient remained in good health, nor was there any appearance of disease about the jaw, until the spring of 1855, when the third and last swelling was discovered. For two or three months previous to the last operation, the tumor or swelling increased faster than it had ever done before. The swelling had encroached so much upon the muscles that the motion of the jaw was quite limited.

She again placed herself under my care for the third time; and on the eleventh of September, 1855, assisted by Professors McNaughton, Armsby and Hun, and in the presence of a large number of physicians and students, I proceeded to perform what

I hope to be an effectual removal of all the disease, by excising the portion of the jaw, as here exhibited.

To detach the temporal muscle from the coronoid process, and to disarticulate the jaw on one side, and that, too, without injury to the important nerves and vessels, that we had been so fortunate to avoid wounding in the two previous operations, required much study and reflection. Rather than that there should be a paralysis of all the muscles of one side of the face, I preferred the deformity of a cicatrix, extending from the angle of the mouth downwards and backwards to near the anterior extremity of the old cicatrix; and from thence backward and upward as high as we could go without reaching the portio-dura. On elevating this large flap, the greater portion of the tumor could be exposed. The base of the jaw was divided with a chain saw, about an inch and a half in front of the angle. The masseter muscle was detached from the outer face of the angle—the pterygoideus internus from the inner face of the same bone; and the temporal muscle from the coronoid process. This dissection was exceedingly difficult. The upper part of it was executed with a curved knife, and with a probed pointed bistoury; and with such complete success, that no artery was wounded, from which the flow of blood could not be arrested by compression. Large quantities of lint were packed into the cavity made by the removal of a large diseased mass, and the external wound was closed by sutures and adhesive straps.

The operation, though severe and somewhat protracted, was borne with great fortitude. No untoward symptom followed the operation, and the patient recovered rapidly, and again returned to Canada at the end of six or seven weeks, in good health, and with more freedom of motion in the remaining portion of the jaw than before the operation.

In comparing this case with that of Professor Symes, whose brief history I have given, it will be observed that there is great similarity in the development, in the performance of the three operations, and in the character of the morbid specimens.



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leg than before the operation.

It is worthy of note that the patient, whose  
partial paralysis I have now described, had been a great  
sufferer in the development of the paralytic of the lower  
extremities and in the character of the muscular condition.

Henry W. Williams, Jr &

Boston

Mass.